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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,270	01/05/2006	Yukio Kuramasu	96790P513	3356

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EXAMINER
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VANCHY JR, MICHAEL J

ART UNIT	PAPER NUMBER
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2624

MAIL DATE	DELIVERY MODE
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11/14/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,270	<b>Applicant(s)</b> KURAMASU ET AL.	
	<b>Examiner</b> Michael Vanchy Jr.	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/09/2005</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1, 2, 4-8, 13-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Nomoto et al., US 6,950,545 B1.**

#### **Regarding claim 1:**

Nomoto et al. (Nomoto) describes an impurity measuring method (Abstract) characterized by comprising the steps of: arranging a sample having a fracture surface on a table with the fracture surface facing up (Fig. 2, 3, and Abstract); irradiating the fracture surface with light from a plurality of directions from above the table (Fig. 2, Abstract, col. 4, and lines 38-46); sensing an image of the fracture surface irradiated with the light (Fig. 2, item "21", col. 4, lines 40-41); processing the sensed image into a continuous tone color image (Fig. 5, col. 2, lines 31-37 and col. 5, lines 45-49); and binarizing the continuous tone color image through comparison between a result of the continuous tone color image processing (col. 5, lines 50-52) and a threshold value (Fig. 16(d), and col. 9, lines 21-28).

#### **Regarding claim 2:**

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An impurity measuring method according to claim 1, characterized in that the step of irradiating with the light includes the step of irradiating the fracture surface with indirect illumination (Fig. 2, item "24a" which is the white light used for illumination and is indirect with respect to the fracture surface).

**Regarding claim 4:**

An impurity measuring method according to claim 1, characterized by further comprising the steps of: detecting an image region having a higher luminance than the threshold value from the binarized image (Figs. 6, 15 and 16, col. 9, lines 16-23); and measuring a pixels count of the detected image region (Fig. 9, col. 7, lines 50-54).

**Regarding claim 5:**

An impurity measuring method according to claim 4, characterized by further comprising the steps of: recognizing the detected image region as an impurity region when the measured pixel count is larger than a predetermined pixel count (Fig. 9, col. 7, lines 55-61); and avoiding recognizing the detected image region as an impurity region when the measured pixel count is smaller than the predetermined pixel count (col. 8, lines 37-41 and col. 9, lines 21-28).

**Regarding claim 6:**

An impurity measuring method according to claim 1, characterized in that the step of arranging a sample includes the step of arranging an aluminum sample on the table (Abstract, "inspecting a crack in a metal surface," the examiner takes into account that aluminum is a type of metal).

**Regarding claim 7:**

An impurity measuring method according to claim 1, characterized in that the step of sensing an image includes the step of sensing an image of the fracture surface by a CCD camera (Fig. 2, item "21" and col. 4, lines 40-41. The examiner takes into account that video cameras use CCDs containing grids of pixels.).

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**Regarding claim 8:**

An impurity measuring device (Fig. 2) characterized by comprising: a table on which a sample having a fracture surface facing up (Fig. 2, 3, and Abstract); illuminating means, arranged above the table, for irradiating the fracture surface with light from a plurality of directions (Fig. 2, Abstract, col. 4, and lines 38-46); image sensing means for sensing an image of the fracture surface irradiated with the light (Fig. 2, item "21", col. 4, lines 40-41); continuous tone color image processing means for processing the sensed image into a continuous tone color image (Fig. 5, col. 2, lines 31-37 and col. 5, lines 45-49); and binarizing means for binarizing the continuous tone color image through comparison between a result of the continuous tone color image processing (col. 5, lines 50-52) and a threshold value (Fig. 16(d), and col. 9, lines 21-28).

**Regarding claim 13:**

An impurity measuring device according to claim 8, characterized by further comprising: high-luminance region detection means for detecting an image region having a higher luminance than the threshold value from the image binarized by said binarizing means (Figs. 6, 15 and 16, col. 9, lines 16-23); and pixel count measuring means for measuring a pixel count of the image region detected by said high-luminance region detection means (Fig. 9, col. 7, lines 50-54).

**Regarding claim 14:**

An impurity measuring device according to claim 13, characterized by further comprising impurity region recognizing means for recognizing the image region detected by said high-luminance region detection means as an impurity region when the pixel count measured by said pixel count measuring means is larger than a predetermined pixel count (Fig. 9, col. 7, lines 55-61), and avoiding recognizing the detected image region as an impurity region when the measured pixel count is smaller than the predetermined pixel count (col. 8, lines 37-41 and col. 9, lines 21-28).

**Regarding claim 15:**

An impurity measuring device according to claim 8, characterized in that the sample comprises aluminum (Abstract, "inspecting a crack in a metal surface," the examiner takes into account that aluminum is a type of metal).

**Regarding claim 16:**

An impurity measuring device according to claim 8, characterized in that said image sensing means comprises a CCD camera (Fig. 2, item "21" and col. 4, lines 40-41. The examiner takes into account that video cameras use CCDs containing grids of pixels.).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. **Claims 3, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomoto et al., US 6,950,545 B1 and further in view of Roustaei, 2002/0050518 A1.**

**Regarding claims 3 and 9-12**, Nomoto et al. teaches an impurity measuring device and method but is silent on using a concave reflection surface, which reflects the light emitted by a light source. However, Roustaei uses a reflection surface (mirror) as well as light-emitting diodes as the light source. The reflective surface that the applicant claims only has the effect of giving different angles of light to illuminate the fractured surface. The mirror used in Roustaei (Fig. 13, item "1350") is used to direct the light, which can be directed into multiple directions. Also there are multiple LEDs, or light-emitting diodes, mounted around the lens system (Fig. 13, item "1310" and [0163]). The plurality of LEDs causes a plurality of random directions that the light is emitted towards the fractured surface, thus giving the exact same results as using the concave reflection surface within a reflection dome. A sensing apparatus is used in both Nomoto (Fig. 2, item "21") and Roustaei (Fig. 1, item "110") to receive an image of the surface. Thus, it would be clear to one of ordinary skill in the art, to modify Nomoto to include multiple LEDs to increase the amount of random directions that the light is emitted towards the fractured surface to increase the accuracy of the image sensed by said sensor.

#### ***Examiner's Note***

The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not

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constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed....” In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Vanchy Jr. whose telephone number is (571) 270-1193. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

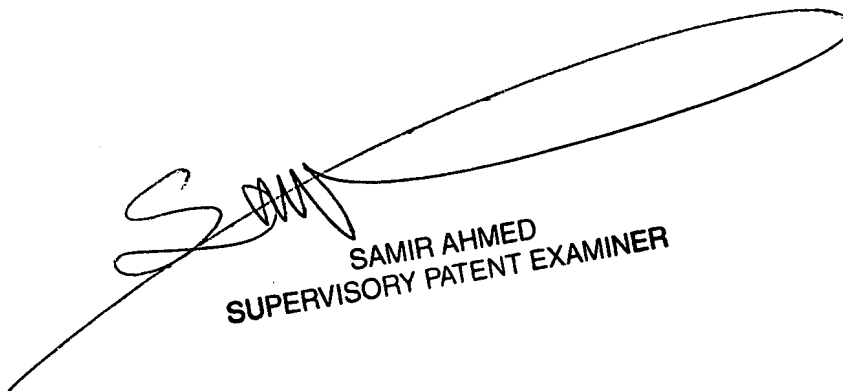
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